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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/064,057	04/22/98	GERARD G	0942.4330002

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STERNE KESSLER GOLDSTEIN & FOX
1100 NEW YORK AVENUE NW
SUITE 600
WASHINGTON DC 20005-3934

EXAMINER	
MONSHIPOURI, M	
ART UNIT	**PAPER NUMBER**
1652	11

DATE MAILED: 04/28/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/064,057	Applicant(s) Gerard et al.
	Examiner Maryam Monshipouri	Group Art Unit 1652

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *26, 28, 33, 34, and 39-41* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *26, 28, 33, 34, and 39-41* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *8,9*

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Claims 26, 28, 33-34, 37, and 39-41 are under examination on the merits.

Specification

1. The abstract of the disclosure is objected to because it exceeds 250 words. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 28 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for producing Avian Sarcoma Leukosis Virus Reverse Transcriptase (ASLV-RT) its derivatives, variants fragments or mutants thereof. The specification at pages 25, and 45 teaches merely about polymerase encoding region and RNase encoding domains being mutated by one or more point mutation, deletion mutation and/or insertional mutations, respectively. However, the structural features required for other variants, derivatives, mutants and fragments of RT subunits are not discussed. For example what is the required length for a fragment of RT or its subunits that can be functional alone or in combination with another subunit of RT? Further, on pages 27-28 the specification teaches more than one way by which the functional activities of such

variants, mutants, derivatives and fragments may be identified. The specification fails to distinctly specify a single functional criterium by which such variants, derivatives, mutants etc. may be screened. The criteria for undue experimentation, summarized in *re wands,* 8 USPQ2nd 1400 (Fed. Cir. 1988), are: 1) the quantity of experimentation necessary, 2) the amount of direction or guidance presented, 3) the presence or absence of working examples, 4) the nature of the invention, 5) the state of prior art, 6) the relative skill of those in that art, 7) the predictability of the art, and 8) the breadth of the claims. In view of the lack of guidance provided in the specification and the quantity of experimentation necessary in order to screen for variants, mutants, fragments and derivatives of RT subunits that retain the desired activity and the unpredictability of the art with regards to what mutants and derivatives and fragments and mutants are likely to successfully retain the desired functional activity, the skilled artisan has to go through undue experimentation in order to identify the useful products and clam 28 is likely to go beyond the scope of the disclosure.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 26, 28, 33-34, 37, and 39-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Alexander et al. (J. Virol., 61(2), 534-542, 1987, cited in the IDS). Alexander et al. teach the recombinant production of the alpha subunit of a Reverse Transcriptase from an Avian Sarcoma and Leukosis Virus (ASLV) using E. coli as a host (see the abstract) prior to this invention, anticipating claims 26 (and its dependent claims 32-34, 37 and 39-41) as well as claim 28.

6. Claim 34 is rejected under 35 U.S.C. 102(b) as being anticipated by Soltis et al. (Proc. Natl. Acad. Sci. U.S.A., 85, 3372-3376, 1988, cited in the IDS). Soltis et al. teach the recombinant preparation of the individual subunits of ASLV. They further prepare an AMV-RT heterodimer by mixing the individually isolated subunits (see their fig 5 and page 3375) prior to this invention anticipating claim 34.

7. Claim 37 is rejected under 35 U.S.C. 102(b) as being anticipated by Chernov et al. (Biomed. Sci., 2, 49-53, 1991, cited in the IDS). Chernov et al. (see abstract) teach the recombinant preparation or Rous sarcoma Virus (RSV) using E. coli, prior to this invention, anticipating claim 37.

8. ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Soltis et al. Cited above) in view of Muller et al. (J. Biol. Chem., 264 (24), 13975-13978, 1989, cited in the IDS). Soltis et al. teach the recombinant expression of alpha and beta subunits of ASLV. They also show that the alpha and beta subunits of ASLV-RT can be expressed in E. coli and that the properties of the soluble, enzymatically active proteins resemble those of the viral proteins. They further teach that alpha-beta heterodimer of ASLV-RT possesses several enzymatic activities, including an RNA dependent DNA polymerase, a DNA-dependent DNA polymerase, a DNA-RNA unwinding activity etc. which can be exploited in gene cloning. However, Soltis et al. do not teach obtaining high yields of the ASLV-RT protein by coexpression of the RT subunits in a single host. Muller et al. teach that heterodimer of HIV-1 Reverse Transcriptase in E. coli can be produced directly in high yields by coexpression of its subunits, simultaneously. It would have been obvious to one of ordinary skill in the art to to use the individually cloned subunits of ASLV-RT of Soltis et al. and coexpress simultaneously in E. coli in order to obtain higher yields of ASLV-RT which has many useful activities for gene cloning.

11. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alexander et al. (cited above) in view of Gerard et al. (Focus, 11, 66-69, 1989, cited in the IDS). Alexander et al. teach the recombinant production of the alpha subunit of ASLV using E. Coli as a host.

Alexander et al. do not teach modification of the RNase H in order to reduce its activity during recombinant RT production. Gerard et al. teach that a major difficulty in cDNA synthesis is caused by RT RNase activity which results in low yields of cDNA synthesis. They further teach a strategy to improve the yield of Moloney Murine Leukemia Virus RT cDNA synthesis by deleting the portion of gene that codes for RNase H. It would have been obvious to one of ordinary skill in the art to use the expression method of Alexander et al. and fully or partially delete the RNase gene according to Gerard et al. in order to improve the yield of cDNA encoding the alpha subunit of ASLV-RT.

12. No claims are allowed.

13. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Maryam Monshipouri, Ph.D. whose telephone number is (703) 308-1083.

The Examiner can normally be reached daily from 8:30 A.M. to 4:30 P.M.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Dr. P. Achutamurthy, can be reached at (703) 308-3804. The OFFICIAL fax number for Technology Center 1600 is (703) 308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 1600 receptionist whose telephone number is (703) 308-0196.

Maryam Monshipouri, Ph.D.

PONNATHAPURA ACHUTAMURTHY
PRIMARY EXAMINER
GROUP 1800